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NOTES AND LITERATURE.

ZOÖLOGY.

Gardiner's "Maldive and Laccadive Archipelagoes," Part II.[1]— This second part contains ten "reports." The first, by F. F. Laidlaw, deals with the Amphibia and Reptilia. All but one of the species are abundant in Ceylon, and the exception, *Lygosoma albopunctatum*, is a lizard that is widespread in the Oriental region. For most of the species the region in question is near the western limit of its area of distribution. Only two Amphibia are listed, a Rana and a Bufo; four lizards, two Hemidactyli, a Calotes, and the Lygosoma; four snakes; one species of Testudinidæ (Nicoria) and two marine turtles (Chelone).

The Lepidoptera are listed by E. Meyrick. There are sixty-seven species, of which practically all occur also in India or Ceylon. A single species of Notarcha, regarded as new, replaces the widespread *N. multilinealis*.

Mr. A. E. Shipley has enumerated the six species of Echiurodea and nineteen sipunculoidea. The former belong to the genera Bonellia and Thalassema, characteristic of the warm and temperate seas. A new genus of sipunculids, Lithacrosiphon, allied to Aspidosiphon, is described and figured.

The land and fresh-water mollusks are treated by E. A. Smith. He says: "The present collection comprises eight land and two fresh-water forms from the Maldives, and four terrestrial species from the Laccadives, three of which are included among those from the Maldives. The latter group, judging from the collection at hand, does not possess a single indigenous species, all the forms occurring either on the Indian peninsula or in Ceylon or other localities. As many plants are introduced into the islands by foreign vessels, some or all of the Mollusks there may be accounted for by importation. The list includes *Succinea vitrea*, known elsewhere only from Calcutta and Bombay; a new species, *Sitala vagata*, probably from India; *Euplecta indica*, var. *malabarica*, found on the adjacent Malabar coast; *Xestina bombayana*, agreeing "in all respects with those from the mainland of India"; *Rhachis punctatus* and *Opeas gracilis*, which are resistant forms associated with plants, with which they may be transported; *Tornatellina manilensis; Melampus castaneus*, from the shore, a wide ranging species; *Leptopomoides halophilus; Melania tuberculata*, found from Syria to Australia and West Africa; and *Cyrena ceylonica*, of mangrove swamps.

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[1] *The Fauna and Geography of the Maldive and Laccadive Archipelagoes*, etc. Edited by J. Stanley Gardiner. Cambridge, University Press, 1902. Vol. i, pt. ii, pp. vi, 119–222, Pls. VI–XIII, Figs. 24–40.

The pigments of corals have been investigated by Dr. MacMunn, who finds them "either chlorophylloid or of a closely connected kind of pigment, which latter absorbs the violet end of the spectrum and seems generally changeable into the next kind by the agency of heat, etc., namely, into the dark pigment which gives the coral its dark color in the fresh condition."

The sixteen species of Chætognatha are treated by L. Doncaster. In his consideration of the variation and distribution of the group he makes many interesting points. He lays stress on the fact that since closely allied species are found living together without barrier of habitat, they can hardly have arisen through natural selection; [but it must not be forgotten that there are others than *spacial* barriers]. Remarkable is the occurrence here of a species (*Sagitta flaccida*) previously described only by Conant from the Bahamas.

The six dragon flies are listed by F. F. Laidlaw. One seems to be new, the others are well known Ceylon and Indian species, or have a wider distribution.

The first installment of a series of papers on marine crustaceans is given by L. A. Borradaile. He here considers the Portunidæ, a family that "is highly variable and varietal [exhibiting varieties] and is probably undergoing rapid evolution in many directions." The account of each species is accompanied by valuable notes on its variation.

The longest contribution is by Gardiner, continuing his account of the coral formation of the islands. It is clear and interesting. He assumes, first of all, the former existence of a continent connecting India and Madagascar, which underwent subsidence, leaving certain elevations where mountain peaks were. The archipelagoes occupy the position of one or two of these mountains. Second, the mountains became eroded by the action of oceanic currents to nearly level plateaux two hundred fathoms below the surface. Third, upon these plateaux there began to grow *deep sea* corals, assisted by nullipores and other organisms. By growing on the skeletons of their ancestors these corals formed banks up to forty or fifty fathoms, at which height the true reef-building corals were able to attach themselves. In time they gained the supremacy and built up the reef to near the surface. A lagoon was formed in the center of the reef partly by the more rapid growth of the organisms on the edge of the bank and partly by the subsequent solution of the central parts. This article is well illustrated by charts and diagrams. C. B. D.

Jordan and Heath's "Animal Forms."[1] — This "second book of zoölogy" is the companion volume of the already well-known *Animal Life* by Jordan and Kellogg, and the two books may be obtained separately or bound together in one volume with the title *Animals*. Whereas the first volume, *Animal Life*, dealt with animal ecology, the second book gives an elementary account of animal morphology. The introductory chapters deal with the differences between animals and plants, the characteristics of an animal as exemplified by a mammal, and the cell and protoplasm. Then follows an examination of typical representatives of the great groups, from the simplest to the most complex. While animals are here considered primarily from the morphological viewpoint, considerable attention is given to functions of organs and to habits and life histories.

Animal Life was designed for the first half year in zoölogy in the high school, and *Animal Forms* to complete a full year's work. However, *Animal Forms* may be used alone or as the first book.

With regard to the adaptability of the book to the conditions obtaining in secondary schools, *Animal Forms* and its companion volume are unquestionably the best existing books for supplementary reading for the high-school beginners; but as a *basis* for an elementary course they are far from practicable, for it will be difficult to follow either book in close correlation with laboratory study. In spite of the authors' emphasis upon "a basis of observation," there has already been manifested in the use of *Animal Life* in some schools a tendency to drift backward towards the old-time recitation method. The informational side of zoölogical teaching must not be allowed to displace scientific training, and a definite laboratory course, and not a text-book, must give the foundation, to which may be added supplemental and closely correlated reading. As sources for such collateral information from which high-school teachers may select topics relating to the laboratory study, *Animal Forms* and *Animal*

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[1] Jordan, David Starr, and Heath, Harold. New York, Appleton, 1902. 8vo, vi + 258 pp., 140 figs.